

# A47 Series Logic Board



## Quick Start Manual

## Software Version 45

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# 1 Opening the Machine

The machine's service functions operate through the main display and three programming buttons, White, Red and Black that will be found on the display circuit board (See the machine's Manual-A for the location of the display board in any particular machine). When entering values (such as passwords, dispenser refill amounts, etc.) the White Programming Button usually increases a value, the Black Programming Button usually decreases a value and the Red Programming Button usually selects the displayed value, and moves to the next step in the programming sequence.

The machine will not permit service functions to operate unless the main door is open. Details of how to open and close the main door for any particular machine will be found in the machine's Manual-A. Once the door has been opened the machine will enter service mode and the main display will change.

## 1.1 Clearing Error Conditions

Various error conditions may occur during machine operations. Errors that cause the machine to halt will be displayed on the display as "Err " and a two digit code number. If an error occurs during a transaction, then the error code display will alternate with the amount of cash remaining to be paid out. The machine is designed to recover from error conditions if it can, so some error conditions will not be reported immediately because the machine has reconfigured to bypass the problem and continue to operate, albeit with reduced efficiency and reduced functionality.

When the main door is opened the most recent outstanding error condition will be displayed. Press the RED programming button, or open and shut the main door in order to acknowledge the error condition, and display the previous error code (if any). Each time the main door is closed the machine will configure itself back to its fully operational state. Descriptions of the error codes and suggested remedies are given in Appendix A.

## 1.2 Entering Passwords

Before the machine gives access to parts of the menu system it will require a password to be entered. This protects vulnerable parts of the machine from unauthorised and accidental access. When the machine is shipped all the passwords will usually be set to a default value of:

Refill password: 0000  
Engineering password: 0000  
Supervisor password: 0000  
Alarm password: 0000;

These default passwords may be changed by any authorised operator. If the password is forgotten it cannot be reset on site. Contact the factory immediately for advice if a password is forgotten.

When the machine requires a password it will display 0000 with the units (rightmost) digit flashing. The password is entered one digit at a time using the White and Black Programming Buttons to change the digit and the Red Programming Button to select the digit and move on to the next one.

## 1.3 Cancelling the Alarm

The machine may be fitted with an alarm unit that will sound an alarm condition when one or more of up to six different events happen.

Condition	Triggered by:	Reset by:	Indication
Dispenser Fault	Any Dispenser becoming empty, jammed or faulty.	Programming Buttons	Pulse alarm.
Acceptor Fault	Coin or Note Acceptor fault.		Pulse alarm.
Fatal Fault	Any fault that causes the machine to shutdown.		Pulse alarm.
Door Alarm	Opening the main door.		Pulse for 25 seconds, then continuous.
Theft Alarm	Optional anti-theft detector.		Continuous alarm.
Power Fail	Optional power-fail detector.	Key	Continuous alarm.

The alarm has two indications. In Pulse Alarm Mode a short pulse (about 1/10<sup>th</sup> second long) is generated every few seconds. In Continuous Alarm Mode the alarm operates continuously.

The “Power Fail Alarm” cannot be disabled or cancelled from the Programming Buttons. The optional “Power Fail Alarm Unit” is fitted with a key-switch that is used to enable, disable and cancel the power fail alarm. The other alarms are cancelled by entering the Alarm Password. The Alarm Password must be entered each time the main door is opened if an alarm condition has been triggered. Closing the main door will automatically re-enable all the alarm condition triggers.

# 2 The QuickDump Facility

It is often necessary, for audit, maintenance, storage or transport reasons, to empty the dispensers and the machine is able to dump its dispensers under operator control. The QuickDump facility allows the machine's first two dispensers to be emptied easily and quickly, but if it is necessary to empty any other dispensers, or to test and audit any of the dispensers then see the "Dispenser Dump and Audit" section of the machine's Manual-B. The machine cannot dump a dispenser if it is processing a transaction. In order to QuickDump a dispenser proceed as follows:

- 1) Open the door (it may be necessary to enter the alarm password if the optional alarm system is fitted) and press the red programming button if necessary to clear error conditions until **PR00→8841** is shown. The display must show **PR00→8841** to indicate that the door is open and that no other error condition is pending.
- 2) In order to QuickDump the 1<sup>st</sup> dispenser press and hold the Black Programming Button until **HOP 1**, alternating with "0" is shown on the display. Then release the button. If the button is not held down for long enough then **0000** with the rightmost digit flashing will be shown. If this happens press and release the door switch and start again. In order to QuickDump the 2<sup>nd</sup> dispenser press and hold the White Programming Button until **HOP 2**, alternating with "0" is shown on the display. Then release the button. If the button is not held down for long enough then **0000** with the rightmost digit flashing will be shown. If this happens press and release the door switch and start again.
- 3) Press the Black Programming Button again to start the dispenser and the White Programming Button to stop it. The display will show the number of items dumped from the dispenser. The dispenser may be started and stopped as often as required by using the Black and White Programming Buttons.

## Warning

**As soon as the Black Programming Button is pressed the selected dispenser will start to dispense. Hoppers (especially the SH400 hopper used in the Nova machine) may dispense coins rapidly and with some force. Ensure that a suitable receptacle is positioned to catch the coins. Card dispensers will dispense a single card and hold it in the card slot exit. When the card is removed another will be dispensed. Note dispensers can either work similarly to card dispensers, or continuously dispense similar to hoppers, depending upon the machine model.**

- 4) Close the machine door to clear the machine after dumping a dispenser.

# 3 The QuickAudit Facility

The machine records all completed transactions in its internal audit. The last 64 transactions are kept in a circular memory so that the 65<sup>th</sup> transaction replaces the 1<sup>st</sup>, the 66<sup>th</sup> replaces the 2<sup>nd</sup> etc. This audit record may be accessed by external systems such as optional audit printers, or remote monitoring systems.

The last completed transaction is available from the machine's local menu system. To view the last transaction record proceed as follows.

- 1) Open the door (it may be necessary to enter the alarm password if the optional alarm system is fitted) and press the red programming button if necessary to clear error conditions until **PF00→884** is shown. The display must show **PF00→884** to indicate that the door is open and that no other error condition is pending.
- 2) Press and hold both the Black and White Programming Buttons. After a few seconds **Audt** will be shown alternating with the total number of transactions (0-9999). This number resets to zero after 10000 transactions.
- 3) Press the Red Programming Button and **d** will be shown alternating with the day-of-month of the last transaction, or **FF** if a real-time-clock is not fitted to the machine.
- 4) Press the Red Programming Button and **h** will be shown alternating with the hour of the last transaction, or **FF** if a real-time-clock is not fitted to the machine.
- 5) Press the Red Programming Button and **m** will be shown alternating with the minute of the last transaction, or **FF** if a real-time-clock is not fitted to the machine.
- 6) Press the Red Programming Button and **s** will be shown alternating with the second of the last transaction, or **FF** if a real-time-clock is not fitted to the machine.
- 7) Press the Red Programming Button and **v** will be shown alternating with the total cash value accepted by the machine for the last transaction. This number is shown without a decimal point and cannot be greater than 9999.
- 8) Press the Red Programming Button and **i** will be shown alternating with the number of different items (notes and coins) accepted by the machine for the last transaction. This number cannot be greater than 31. If 31 or more items were accepted by the machine for the last transaction then 31 will be shown.
- 9) Press the Red Programming Button and **E** will be shown alternating with the machine's error code condition at the end of the last transaction. For an explanation of what error code mean see the section "Appendix – Error Codes".
- 10) Press the Red Programming Button to see how many items each payment device paid for the last transaction. Each dispenser available in the machine is shown in turn. The dispenser identifier is shown as **HX** where **X** is the dispenser number 1 to 8, alternating with the number of items paid by that dispenser (0-255) during the last transaction. This number cannot be greater than 255. If 255 or more items were paid by the dispenser during the last transaction then this number will be 255.
- 11) Close the machine door to finish.

# 4 Cash Entry Testing

The machine's cash entry system may be tested on site by the operator in order to confirm the operation of the Coin Acceptor, Note Acceptor and software configuration. Coin Acceptor and Note Acceptor testing is performed in slightly different ways because the options available to Coin Acceptors and Note Acceptors are slightly different. The details of note entry testing follow after the details of coin entry testing.

## 4.1 Coin Entry Testing

- 1) Open the door (it may be necessary to enter the alarm password if the optional alarm system is fitted) and press the red programming button if necessary to clear error conditions until **PR00-884** is shown. The display must show **PR00-884** to indicate that the door is open and that no other error condition is pending.
- 2) Press the Red Programming Button to obtain access to the Engineering Menu. This allows the machine to be configured in various ways. Firstly the Engineering Password must be entered. The display will show **0000** with the rightmost digit flashing. Use the White (to increase) and Black (to decrease) Programming Buttons to enter the flashing digit of the Engineering Password. The Red Programming Button changes to the next digit.
- 3) If all four digits of the Engineering Password are entered correctly the Engineering Menu will be entered and **----** will be shown on the display. Press the White Programming Button repeatedly until **[0] IN** is shown on the display.
- 4) Press the Red Programming Button to enter the Coin Menu. The display will show **[** and a dash symbol. The Coin Acceptor will be enabled.
- 5) If a coin is passed through the Coin Acceptor its channel number will appear on the display.
- 6) Close the main door to exit the menu.

## 4.2 Note Entry Testing

- 1) Open the door (it may be necessary to enter the alarm password if the optional alarm system is fitted) and if **BUSY** is shown the machine is processing a transaction and cash entry testing may not be performed. Otherwise press the Red Programming Button until **PR00-884** is shown. The display must show **PR00-884** to indicate that the door is open and that no other error condition is pending.
- 2) Press the Red Programming Button to obtain access to the Engineering Menu. This allows the machine to be configured in various ways. Firstly the Engineering Password must be entered. The display will show **0000** with the rightmost digit flashing. Use the White (to increase) and Black (to decrease) Programming Buttons to enter the flashing digit of the Engineering Password. The Red Programming Button changes to the next digit.
- 3) If all four digits of the Engineering Password are entered correctly the Engineering Menu will be entered and **----** will be shown on the display. Press the White Programming Button repeatedly until **NOTE** is shown on the display.
- 4) Press the Red Programming Button to enter the Note Menu. The display will show **]** and a dash symbol. The Note Acceptor will be enabled.
- 5) If a note is passed through the Note Acceptor its channel number will appear on the display.
- 6) Close the main door to exit the menu.

# 5 QuickSet Programming

The A47 logic board used in the machine is a very flexible system that allows the operator to choose in great detail exactly how items are paid out for particular accepted coins and notes. For many applications this fine control is not necessary and makes the reprogramming the machine on site too complicated. The QuickSet programming facility has been added to allow the value of the payout items to be changed quickly and easily on site without detailed knowledge of how the A47-026 logic board works.

- 1) Open the door (it may be necessary to enter the alarm password if the optional alarm system is fitted) and press the red programming button if necessary to clear error conditions until **PR00←884 I** is shown. The display must show **PR00←884 I** to indicate that the door is open and that no other error condition is pending.
- 2) Press the red programming button to obtain access to the engineering menu. This allows the machine to be configured in various ways. Firstly the engineering password must be entered. The display will show **0000** with the rightmost digit flashing. Use the white (to increase) and black (to decrease) programming buttons to enter the flashing digit of the engineering password. The red programming button changes to the next digit.
- 3) If all four digits of the engineering password are entered correctly the engineering menu will be entered and **----** will be shown on the display. Press the white programming button repeatedly until **SET** is shown on the display.
- 4) Press the red programming button to enter the QuickSet Menu. The display will show **SURE** alternating with **NO**. If the red programming button is pressed again at this point then programming will be aborted and the machine will return to the top of the menu system where **----** will be displayed. To continue with QuickSet programming use the white programming button to change the display to **SURE** alternating with **YES** and then press the red programming button again to clear ALL existing programming and start new programming. This step will erase all payment programming and cannot be undone. The display will show **HOP** .
- 5) Press the white programming button repeatedly to select the dispenser with the highest value payout item. The display will show **H<sub>0</sub> X** where **X** is the dispenser number 1 to 8. It is vital that the dispensers are programmed in the correct order, i.e. starting with the highest value and moving in order to the lowest value.
- 6) Press the red programming button to program the value of the dispenser. The dispenser identifier is shown as **H<sub>X</sub>** where **X** is the dispenser number 1 to 8, alternating with the value of the item in the dispenser. Use the white (to increase) and black (to decrease) programming buttons to set the value of the item in the range 0 to 9999.
- 7) Press the red programming button and the display will show **CL** alternating with **NO** to indicate that the “CL-flag” is OFF. For normal operation the “CL-flag” should be left OFF. Certain machines (card dispensing machines that give change) require the “CL-flag to be ON”. If such a machine is being programmed then use the white programming button to change the display to **CL** alternating with **YES** to turn the “CL-flag” ON. The “CL-flag” should only be turned ON if the machine specifically requires it. Contact the factory for advice if programming a card dispensing machine that gives change.
- 8) Press the red programming button and the display will return to showing **HOP** . Return to programming step 6 to program the value of each dispenser in the machine, in order from highest value to lowest. When all dispensers have been programmed press the red programming button without setting a dispenser number to finish QuickSet programming. The machine will return to the top of the menu system where **PR00←884 I** will be displayed.
- 9) Close the door and test the machine with a range of coins and notes to confirm correct payouts before releasing the machine for public use.

# Appendix - Error codes

The machine performs a self-test each time it is powered up and before and after each payout. If an error is detected the message **Err** and an error number will flash on the display and cash entry through the Coin and Note Acceptors will be disabled. When the door is open an error condition can be cancelled by pressing and releasing the Red Programming Button. It is possible that several errors can occur at the same time. When the door is closed (or the door switch is pressed and released) the error currently being reported is cleared and, if there is another error outstanding then it will be shown. The following table details the system errors. These errors always cause the machine to halt and display the error code. If a system error occurs while a transaction is in progress then the transaction will halt immediately and the display will show the error code, and also the amount of cash still to be paid.

Error	Message	Description	Possible Causes and Remedies
	Pr00 ← 8841	Door Open - No error condition or transaction is in progress. Ready for Programming.	<ul style="list-style-type: none"> <li>• Main door is open;</li> <li>• Door or lock mechanism damaged;</li> <li>• Door switch faulty.</li> </ul> Contact the factory for advice. NOTE: 8841 is the program identity number and may differ between machines.
1	Err ← 01	No Dispensers found	<ul style="list-style-type: none"> <li>• A fault has developed in the internal loom;</li> <li>• +5 Volt or +12 Volt power has been lost.</li> </ul> Disconnect the machine from mains power and contact the factory for advice if this error ever occurs.
2	Err ← 02	No Working Dispensers	<ul style="list-style-type: none"> <li>• All dispensers are either empty or jammed. No payments can be made. Refill dispensers and correct dispenser jams as required.</li> </ul>
4	Err ← 04	I2C Bus fail	<ul style="list-style-type: none"> <li>• A fault has developed in the internal loom;</li> <li>• +5 Volt or +12 Volt power has been lost.</li> </ul> Disconnect the machine from mains power and contact the factory for advice if this error ever occurs.
5	Err ← 05	Error Stack Overflow	<ul style="list-style-type: none"> <li>• More than 15 errors have occurred in succession without being resolved. Open the main door and press and release the door switch to show each error in turn on the display. Resolve each error.</li> </ul>
6	Err ← 06	No Working Acceptors	<ul style="list-style-type: none"> <li>• All acceptors are either faulty, jammed or their stackers or escrow/diverter units are full. No cash can be accepted. Resolve problems.</li> </ul>

The following table details the machine errors. The machine may be configured to halt if a machine error occurs during a transaction, or it may be configured to store machine errors that occur during transactions, and to attempt its automatic transaction recovery procedure. Machine errors are always shown when the main door is opened. The automatic transaction recovery procedure may require interaction from the user. For example, if a hopper fault occurs during a transaction, the machine will disable the faulty hopper, illuminate its payout selection buttons, and wait for the user to make another choice of payout.

Error	Message	Description	Possible Causes and Remedies
X 1	Err ← X	General Dispenser Error	<ul style="list-style-type: none"> <li>• A general error has occurred in dispenser X. Check the dispenser for damage and replace if required.</li> </ul>

X 2	Err → X2	Dispenser Low	<ul style="list-style-type: none"> <li>• Dispenser X is running low on items and cannot guarantee to have enough items to complete the next payout. Refill the dispenser.</li> <li>• Hopper X is filled with non-metallic coins and hopper low detection is not disabled. Disable hopper low detection.</li> <li>• The wiring loom connecting hopper X to the logic board has developed a fault. Look for metallic objects (coins) fallen behind the hopper and touching the electrical connections.</li> <li>• Dispenser X low detection has developed a fault. Check and test the dispenser.</li> </ul>
X 3	Err → X3	Dispenser Timeout	<ul style="list-style-type: none"> <li>• Dispenser X has run out of items and low detection is either not working, or has been disabled (perhaps the hopper pays non-metallic coins). Refill the dispenser.</li> <li>• Dispenser X has failed to pay after its allotted time Check the dispenser for jams and damage and replace if required.</li> </ul>
X 4	Err → X4	Dispenser Dump	<ul style="list-style-type: none"> <li>• Hopper X. coin sensor is blocked. Try to shake free any coin lying in the coin exit that may be blocking the sensor. Check that the hopper is filled only with the correct coin. Plastic bags, rubber bands and other items will damage the sensors.</li> <li>• Dispenser X. has paid an item unexpectedly. Check the machine for attack and the dispenser for damage and replace if required.</li> <li>• Dispenser X. item sensor has become blocked or has developed a fault. Check the sensor.</li> </ul> <p>Contact the factory for advice if this error occurs frequently.</p>
X 5	Err → X5	Dispenser Slow	<ul style="list-style-type: none"> <li>• Dispenser X. item sensor has become blocked or has developed a fault. Check the sensor.</li> <li>• Dispenser X has responded slowly. Check the dispenser for damage and replace if required. Check the power supply voltage levels and contact the factory for advice if this error occurs frequently.</li> </ul>
X 6	Err → X6	Dispenser Calculation	<ul style="list-style-type: none"> <li>• During calculation of the number of items to pay from dispenser X a mathematical error has occurred. Contact the factory for advice on appropriate programming.</li> </ul>
X 7	Err → X7	Dispenser Fault	<ul style="list-style-type: none"> <li>• Dispenser X has reported that it does not have the hardware features necessary to complete the function requested. Contact the factory for advice if this error ever occurs.</li> </ul>
91 94	Err → 91 Err → 94	Illegal Coin	<ul style="list-style-type: none"> <li>• The Coin Acceptor has seen a coin that cannot be routed as the programming requires. This will occur if the routing is not appropriate for the combination of Coin Acceptor, Escrow Unit, or Diverter Unit. Contact the factory for advice on appropriate programming.</li> </ul>
97	Err → 97	Coin Acceptor Alarm	<ul style="list-style-type: none"> <li>• The coin acceptor has detected an alarm condition. This is usually due to a strim attempt or stringing.</li> </ul>
A1	Err → A1	ccTalk Overflow	<ul style="list-style-type: none"> <li>• A Note Acceptor operating with the ccTalk protocol has generated a packet too large for the A47 software to process. Contact the factory for advice if this error ever occurs.</li> </ul>
A4 A5	Err → A4 Err → A5	Note Removed	<ul style="list-style-type: none"> <li>• A strim attack has been made against the Note Acceptor or a note has been forcibly removed during acceptance.</li> </ul>

A7	Err ↔ A7	Note Transport Fault	<ul style="list-style-type: none"> <li>The Note Acceptor has detected an alarm condition. It is jammed or running slowly, or the note path transport has developed a fault. Check the Note Acceptor for jammed items, damage and blocked sensors.</li> </ul>
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In addition to the system and machine errors described above there are two informational errors. These are stored within the machine's error system, but are not usually displayed when other errors are shown. They can only occur when power is restored to the machine after a power failure.

Error	Message	Description	Possible Causes and Remedies
F1	Err ↔ F1	Watchdog Failure	<ul style="list-style-type: none"> <li>The main processor chip has detected a software fault and restarted the machine to clear the fault. Contact the factory for advice if this error ever occurs.</li> </ul>
F2	Err ↔ F2	Low Voltage Fault	<ul style="list-style-type: none"> <li>The main processor chip has detected a low voltage fault and halted the machine. The power has now been restored and the machine restarted. This error may indicate a problem with the incoming mains power supply, or a fault in some other machine connected to the same mains power feed. Contact the factory for advice if this error ever occurs.</li> </ul>